

February 12, 2013

RECEIVED

2013

SUPERFUND DIVISION

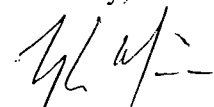
Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
901 North 5th Street
Kansas City, KS 66101

Re: The Doe Run Company - Leadwood Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article VI, Section 50 of the Unilateral Administrative Order (Docket No. CERCLA-07-2006-0272) for the referenced project and on behalf of The Doe Run Company, the progress report for the period January 1, 2013 through January 31, 2013 is enclosed. If you have any questions or comments, please call me at 573-638-5020 or Mark Nations at 573-518-0800.

Sincerely,



Ty L. Morris, P.E., R.G.
Vice President

TLM/jms

Enclosures

c: Mark Nations – TDRC
Matt Wohl – TDRC (electronic only)
Kathy Rangen – MDNR
Tim Skoglund – Barr Engineering

OTCR

40417221



Superfund

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0002

Leadwood Mine Tailings Site
Leadwood, Missouri
Removal Action - Monthly Progress Report
Period: January 1, 2013 – January 31, 2013

1. Actions Performed or Completed This Period:

- a. No activities were completed at the site during this period.

2. Data and Results Received This Period:

- a. During this period, water samples were collected from downstream of Leadwood Dam and the East Seep and Erosion Area, as well as from upstream and downstream of the confluence of Eaton Creek with Big River. The analytical results for this event are included with this progress report.
- b. During this period, the Ambient Air Monitoring Report for Third Quarter 2012 and October 2012 were completed. Any issues identified in these reports are discussed below. A copy of these documents has been sent to your attention.

The Third Quarter 2012 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No samples were taken with the TSP monitors on 07/04/12 due to the holiday.
- There was a QA blank filter for the Leadwood #3 (School) TSP and PM₁₀ monitors on 07/31/12.
- No sample was taken with the Leadwood #3 (School) PM₁₀ monitor on 08/01/12 due to mechanical failure. Upon discovering the issue, the monitor was fixed.
- No sample was taken with the Leadwood #3 (School) TSP monitor on 08/31/12 due to filter damage seemingly caused by an animal. The monitor was cleaned out and the filter replaced.
- No samples were taken with the TSP and PM₁₀ monitors on 09/03/12 due to the holiday.
- No samples were taken with the Leadwood #1 (Wortham) TSP monitor on 09/11/12 due to mechanical failure. Upon discovery, the issue was corrected.
- No samples were taken with the Big River #4 (Primary) PM₁₀ monitor on 09/21/12 due to mechanical failure. Upon discovery, the issue was corrected.

The October 2012 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No sample was taken with the Big River #4 (Primary) PM₁₀ monitor on 10/09/12 due to mechanical failure of the elapsed time indicator. Upon discovery, the issue was corrected.

3. Scheduled Activities not Completed This Period:

- a. None.

4. Planned Activities for Next Period:

- a. Continue vegetation maintenance activities. The use of biosolids will only be continued if a biosolids management plan has been submitted to and approved by EPA.
- b. It is anticipated that EPA will use this site as a soil repository in the future. Preparations for these activities will continue.
- c. Complete monthly water sampling activities as described in the Removal Action Work Plan.
- d. Complete air monitoring activities as described in the Removal Action Work Plan.

5. Changes in Personnel:

- a. None.

6. Issues or Problems Arising This Period:

- a. None.

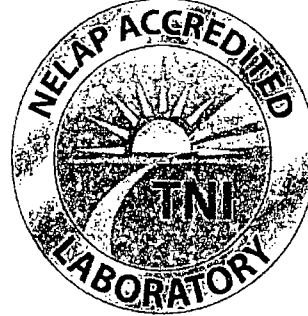
7. Resolution of Issues or Problems Arising This Period:

- a. None.

End of Monthly Progress Report

January 15, 2013

Allison Olds
Barr Engineering Company
1001 Diamond Ridge
Suite 1100
Jefferson City, MO 65109
TEL: (573) 638-5007
FAX: (573) 638-5001



RE: Leadwood Mine Tailings Site NPDES

WorkOrder: 13010449

Dear Allison Olds:

TEKLAB, INC received 5 samples on 1/10/2013 11:27:00 AM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,



Michael L. Austin
Project Manager
(618)344-1004 ex 16
MAustin@teklabinc.com



Report Contents

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

This reporting package includes the following:

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Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# - Unknown hydrocarbon	B - Analyte detected in associated Method Blank
E - Value above quantitation range	H - Holding times exceeded
M - Manual Integration used to determine area response	ND - Not Detected at the Reporting Limit
R - RPD outside accepted recovery limits	S - Spike Recovery outside recovery limits
X - Value exceeds Maximum Contaminant Level	



Case Narrative

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Cooler Receipt Temp: 0.4 °C

Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	KKlostermann@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2014	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2013	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2013	Springfield
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2013	Collinsville
Arkansas	ADEQ	88-0966		3/14/2013	Collinsville
Illinois	IDPH	17584		4/30/2013	Collinsville
Kentucky	UST	0073		5/26/2013	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2013	Collinsville



Laboratory Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Lab ID: 13010449-001

Client Sample ID: LW-001

Matrix: AQUEOUS

Collection Date: 01/09/2013 8:10

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	200	SR	449	mg/L	20	01/14/2013 13:42	R172601
<i>RPD for MS/MSD was outside of QC limit.</i>								
<i>MS and/or MSD did not recover within control limits due to matrix interference.</i>								
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		8.33		1	01/10/2013 12:41	R172448
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)	NELAP	5		760	mg/L	1	01/10/2013 13:12	R172464
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		< 6	mg/L	1	01/10/2013 15:44	R172466
STANDARD METHODS 2540 F								
Solids, Settleable	NELAP	0.2		< 0.2	ml/L	1	01/10/2013 13:22	R172471
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)	NELAP	1.0		3.0	mg/L	1	01/11/2013 17:09	R172542
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	01/11/2013 12:19	84837
Zinc	NELAP	10.0	S	2580	µg/L	1	01/11/2013 12:19	84837
<i>MS QC limits for Zn are not applicable due to high sample/spike ratio.</i>								
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		2.60	µg/L	1	01/11/2013 15:33	84836
Zinc	NELAP	10.0		2710	µg/L	1	01/11/2013 15:33	84836
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead	NELAP	2.00	X	7.27	µg/L	1	01/11/2013 9:26	84827
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead	NELAP	2.00	X	5.46	µg/L	1	01/11/2013 12:58	84838



Laboratory Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Lab ID: 13010449-002

Client Sample ID: LW-002

Matrix: AQUEOUS

Collection Date: 01/09/2013 9:25

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	200		403	mg/L	20	01/14/2013 13:53	R172601
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		8.29		1	01/10/2013 12:43	R172448
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)	NELAP	5		720	mg/L	1	01/10/2013 13:12	R172464
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		< 6	mg/L	1	01/10/2013 15:44	R172466
STANDARD METHODS 2540 F								
Solids, Settleable	NELAP	0.2		< 0.2	ml/L	1	01/10/2013 13:22	R172471
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)	NELAP	1.0		1.4	mg/L	1	01/11/2013 18:00	R172542
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		2.70	µg/L	1	01/11/2013 12:30	84837
Zinc	NELAP	10.0		4270	µg/L	1	01/11/2013 12:30	84837
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		4.20	µg/L	1	01/11/2013 15:51	84836
Zinc	NELAP	10.0		4480	µg/L	1	01/11/2013 15:51	84836
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead	NELAP	2.00	X	10.7	µg/L	1	01/11/2013 9:29	84827
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead	NELAP	2.00		4.53	µg/L	1	01/11/2013 13:02	84838



Laboratory Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Lab ID: 13010449-003

Client Sample ID: LW-US

Matrix: AQUEOUS

Collection Date: 01/09/2013 7:45

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	10		18	mg/L	1	01/14/2013 17:04	R172601
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		8.48		1	01/10/2013 12:46	R172448
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)	NELAP	5		270	mg/L	1	01/10/2013 13:12	R172464
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		< 6	mg/L	1	01/10/2013 15:44	R172466
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)	NELAP	1.0		1.4	mg/L	1	01/11/2013 18:06	R172542
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	01/11/2013 12:44	84837
Zinc	NELAP	10.0		< 10.0	µg/L	1	01/11/2013 12:44	84837
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	01/11/2013 15:57	84836
Zinc	NELAP	10.0		< 10.0	µg/L	1	01/11/2013 15:57	84836
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead	NELAP	2.00		< 2.00	µg/L	1	01/11/2013 9:39	84827
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead	NELAP	2.00		< 2.00	µg/L	1	01/11/2013 13:12	84838



Laboratory Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Lab ID: 13010449-004

Client Sample ID: LW-DS

Matrix: AQUEOUS

Collection Date: 01/09/2013 10:10

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	10		29	mg/L	1	01/14/2013 17:07	R172601
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		8.43		1	01/10/2013 12:48	R172448
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)	NELAP	5		260	mg/L	1	01/10/2013 13:12	R172464
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		< 6	mg/L	1	01/10/2013 15:44	R172466
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)	NELAP	1.0		1.7	mg/L	1	01/11/2013 18:13	R172542
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	01/11/2013 12:47	84837
Zinc	NELAP	10.0		22.4	µg/L	1	01/11/2013 12:47	84837
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	01/11/2013 16:03	84836
Zinc	NELAP	10.0		23.9	µg/L	1	01/11/2013 16:03	84836
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead	NELAP	2.00		< 2.00	µg/L	1	01/11/2013 9:43	84827
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead	NELAP	2.00		< 2.00	µg/L	1	01/11/2013 13:15	84838



Laboratory Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Lab ID: 13010449-005

Client Sample ID: LW-DUP

Matrix: AQUEOUS

Collection Date: 01/09/2013 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	200		411	mg/L	20	01/14/2013 14:17	R172601
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		8.28		1	01/10/2013 12:50	R172448
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)	NELAP	5		700	mg/L	1	01/10/2013 13:12	R172464
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		< 6	mg/L	1	01/10/2013 15:44	R172466
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)	NELAP	1.0		1.6	mg/L	1	01/11/2013 18:19	R172542
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		2.80	µg/L	1	01/11/2013 12:51	84837
Zinc	NELAP	10.0		4320	µg/L	1	01/11/2013 12:51	84837
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		4.40	µg/L	1	01/11/2013 16:21	84836
Zinc	NELAP	10.0		4530	µg/L	1	01/11/2013 16:21	84836
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead	NELAP	2.00	X	11.2	µg/L	1	01/11/2013 9:46	84827
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead	NELAP	2.00		4.74	µg/L	1	01/11/2013 13:19	84838



Sample Summary

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
13010449-001	LW-001	Aqueous	5	01/09/2013 8:10
13010449-002	LW-002	Aqueous	5	01/09/2013 9:25
13010449-003	LW-US	Aqueous	5	01/09/2013 7:45
13010449-004	LW-DS	Aqueous	5	01/09/2013 10:10
13010449-005	LW-DUP	Aqueous	5	01/09/2013 0:00



Dates Report

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Sample ID	Client Sample ID	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
	Test Name				
13010449-001A	LW-001	01/09/2013 8:10	01/10/2013 11:27		
	Standard Methods 2540 D				01/10/2013 15:44
	Standard Methods 2540 F				01/10/2013 13:22
13010449-001B	LW-001	01/09/2013 8:10	01/10/2013 11:27		
	EPA 600 375.2 Rev 2.0 1993 (Total)				01/14/2013 13:42
	Standard Method 4500-H B, Laboratory Analyzed				01/10/2013 12:41
	Standard Methods 2340 C				01/10/2013 13:12
13010449-001C	LW-001	01/09/2013 8:10	01/10/2013 11:27		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			01/10/2013 17:58	01/11/2013 15:33
	Standard Methods 3030 E, 3113 B, Metals by GFAA			01/10/2013 14:57	01/11/2013 9:26
13010449-001D	LW-001	01/09/2013 8:10	01/10/2013 11:27		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			01/10/2013 18:29	01/11/2013 12:19
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			01/10/2013 19:28	01/11/2013 12:58
13010449-001E	LW-001	01/09/2013 8:10	01/10/2013 11:27		
	Standard Methods 5310 C, Organic Carbon				01/11/2013 17:09
13010449-002A	LW-002	01/09/2013 9:25	01/10/2013 11:27		
	Standard Methods 2540 D				01/10/2013 15:44
	Standard Methods 2540 F				01/10/2013 13:22
13010449-002B	LW-002	01/09/2013 9:25	01/10/2013 11:27		
	EPA 600 375.2 Rev 2.0 1993 (Total)				01/14/2013 13:53
	Standard Method 4500-H B, Laboratory Analyzed				01/10/2013 12:43
	Standard Methods 2340 C				01/10/2013 13:12
13010449-002C	LW-002	01/09/2013 9:25	01/10/2013 11:27		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			01/10/2013 17:58	01/11/2013 15:51
	Standard Methods 3030 E, 3113 B, Metals by GFAA			01/10/2013 14:57	01/11/2013 9:29
13010449-002D	LW-002	01/09/2013 9:25	01/10/2013 11:27		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			01/10/2013 18:29	01/11/2013 12:30
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			01/10/2013 19:28	01/11/2013 13:02
13010449-002E	LW-002	01/09/2013 9:25	01/10/2013 11:27		
	Standard Methods 5310 C, Organic Carbon				01/11/2013 18:00
13010449-003A	LW-US	01/09/2013 7:45	01/10/2013 11:27		
	Standard Methods 2540 D				01/10/2013 15:44
13010449-003B	LW-US	01/09/2013 7:45	01/10/2013 11:27		
	EPA 600 375.2 Rev 2.0 1993 (Total)				01/14/2013 17:04
	Standard Method 4500-H B, Laboratory Analyzed				01/10/2013 12:46
	Standard Methods 2340 C				01/10/2013 13:12



Dates Report

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Sample ID	Client Sample ID	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
	Test Name				
13010449-003C	LW-US	01/09/2013 7:45	01/10/2013 11:27		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			01/10/2013 17:58	01/11/2013 15:57
	Standard Methods 3030 E, 3113 B, Metals by GFAA			01/10/2013 14:57	01/11/2013 9:39
13010449-003D	LW-US	01/09/2013 7:45	01/10/2013 11:27		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			01/10/2013 18:29	01/11/2013 12:44
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			01/10/2013 19:28	01/11/2013 13:12
13010449-003E	LW-US	01/09/2013 7:45	01/10/2013 11:27		
	Standard Methods 5310 C, Organic Carbon				01/11/2013 18:06
13010449-004A	LW-DS	01/09/2013 10:10	01/10/2013 11:27		
	Standard Methods 2540 D				01/10/2013 15:44
13010449-004B	LW-DS	01/09/2013 10:10	01/10/2013 11:27		
	EPA 600 375.2 Rev 2.0 1993 (Total)				01/14/2013 17:07
	Standard Method 4500-H B, Laboratory Analyzed				01/10/2013 12:48
	Standard Methods 2340 C				01/10/2013 13:12
13010449-004C	LW-DS	01/09/2013 10:10	01/10/2013 11:27		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			01/10/2013 17:58	01/11/2013 16:03
	Standard Methods 3030 E, 3113 B, Metals by GFAA			01/10/2013 14:57	01/11/2013 9:43
13010449-004D	LW-DS	01/09/2013 10:10	01/10/2013 11:27		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			01/10/2013 18:29	01/11/2013 12:47
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			01/10/2013 19:28	01/11/2013 13:15
13010449-004E	LW-DS	01/09/2013 10:10	01/10/2013 11:27		
	Standard Methods 5310 C, Organic Carbon				01/11/2013 18:13
13010449-005A	LW-DUP	01/09/2013 0:00	01/10/2013 11:27		
	Standard Methods 2540 D				01/10/2013 15:44
13010449-005B	LW-DUP	01/09/2013 0:00	01/10/2013 11:27		
	EPA 600 375.2 Rev 2.0 1993 (Total)				01/14/2013 14:17
	Standard Method 4500-H B, Laboratory Analyzed				01/10/2013 12:50
	Standard Methods 2340 C				01/10/2013 13:12
13010449-005C	LW-DUP	01/09/2013 0:00	01/10/2013 11:27		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			01/10/2013 17:58	01/11/2013 16:21
	Standard Methods 3030 E, 3113 B, Metals by GFAA			01/10/2013 14:57	01/11/2013 9:46
13010449-005D	LW-DUP	01/09/2013 0:00	01/10/2013 11:27		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			01/10/2013 18:29	01/11/2013 12:51
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			01/10/2013 19:28	01/11/2013 13:19
13010449-005E	LW-DUP	01/09/2013 0:00	01/10/2013 11:27		
	Standard Methods 5310 C, Organic Carbon				01/11/2013 18:19



Quality Control Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

EPA 600 375.2 REV 2.0 1993 (TOTAL)

Batch R172601		SampType: MBLK		Units mg/L						
SampID: MBLK										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Sulfate	10		< 10						01/14/2013	

Batch R172601		SampType: LCS		Units mg/L						
SampID: LCS										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		10		20	20	0	100.0	90	110	01/14/2013

Batch R172601		SampType: MS		Units mg/L						
SampID: 13010449-001BMS										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate		200		656	200	449.0	103.5	90	110	01/14/2013

Batch R172601		SampType: MSD		Units mg/L				RPD Limit 10		
SampID: 13010449-001BMSD										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate		200	SR	732	200	449.0	141.6	656.0	10.98	01/14/2013

STANDARD METHOD 4500-H B, LABORATORY ANALYZED

Batch R172448		SampType: LCS		Units						
SampID: LCS										Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lab pH		1.00		7.03	7.00	0	100.4	99.1	100.8	

Batch R172448		SampType: DUP		Units		RPD Limit 10				Date Analyzed
SampID: 13010449-001BDUP										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	
Lab pH		1.00		8.35				8.330	0.24	
01/10/2013										

Batch R172448		SampType: DUP		Units		RPD Limit 10				Date Analyzed
SampID: 13010449-002BDUP										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	
Lab pH		1.00		8.29				8.290	0.00	

Batch R172448		SampType: DUP		Units		RPD Limit 10				
SampID: 13010449-003BDUP										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH		1.00		8.47				8.480	0.12	01/10/2013



Quality Control Results

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Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

STANDARD METHOD 4500-H B, LABORATORY ANALYZED

Batch R172448 SampType: DUP		Units		RPD Limit 10				Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val %RPD
Lab pH		1.00		8.43				8.430 0.00 01/10/2013

Batch R172448 SampType: DUP		Units		RPD Limit 10				Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val %RPD
Lab pH		1.00		8.27				8.280 0.12 01/10/2013

STANDARD METHODS 2340 C

Batch R172464 SampType: MBLK		Units mg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit High Limit
Hardness, as (CaCO ₃)		5		< 5				01/10/2013

Batch R172464 SampType: LCS		Units mg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit High Limit
Hardness, as (CaCO ₃)		5		980	1000	0	98.0	90 110 01/10/2013

Batch R172464 SampType: MS		Units mg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit High Limit
Hardness, as (CaCO ₃)		5		460	200	270.0	95.0	85 115 01/10/2013

Batch R172464 SampType: MSD		Units mg/L		RPD Limit 10				Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val %RPD
Hardness, as (CaCO ₃)		5		450	200	270.0	90.0	460.0 2.20 01/10/2013

STANDARD METHODS 2540 D

Batch R172466 SampType: MBLK		Units mg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit High Limit
Total Suspended Solids		6		< 6				01/10/2013

Batch R172466 SampType: LCS		Units mg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit High Limit
Total Suspended Solids		6		88	100	0	88.0	85 115 01/10/2013
Total Suspended Solids		6		102	100	0	102.0	85 115 01/10/2013
Total Suspended Solids		6		107	100	0	107.0	85 115 01/10/2013
Total Suspended Solids		6		92	100	0	92.0	85 115 01/10/2013



Quality Control Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

STANDARD METHODS 2540 D

Batch R172466		SampType: DUP		Units mg/L				RPD Limit 15		
SampleID: 13010449-003A DUP										Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	
Total Suspended Solids		6		< 6				0	0.00	01/10/2013

STANDARD METHODS 5310 C, ORGANIC CARBON

Batch	R172542	SampType:	MBLK	Units mg/L						
SampleID:		ICB/MBLK								
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Total Organic Carbon (TOC)	1.0		< 1.0						01/11/2013	

Batch R172542		SampType: LCS		Units mg/L						
SampleID: ICV/LCS										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		10.0		61.0	59.7	0	102.1	90	110	01/11/2013

Batch R172542		SampType: MS		Units mg/L						
SampID: 13010449-001EMS										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)		1.0		7.7	5.0	2.990	93.8	85	115	01/11/2013

Batch R172542		SampType: MSD		Units mg/L				RPD Limit 10		
SampID: 13010449-001EMSD										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)		1.0		7.8	5.0	2.990	96.4	7.680	1.68	01/11/2013

EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)

Batch 84837		SampType: MBLK		Units µg/L						
SampleID: MB-84837										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Cadmium	2.00		< 2.00	2.00	0	0	-100	100	01/11/2013	
Zinc	10.0		< 10.0	10.0	0	0	-100	100	01/11/2013	

Batch 84837		SampType: LCS		Units µg/L						
SampleID: LCS-84837										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Cadmium	2.00		44.2	50.0	0	88.4	85	115	01/11/2013	
Zinc	10.0		446	500	0	89.1	85	115	01/11/2013	

Batch 84837		SampType: MS		Units µg/L						
SampleID: 13010449-001DMS										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium		2.00		44.6	50.0	1.8	85.6	75	125	01/11/2013
Zinc		10.0		2980	500	2583	78.6	75	125	01/11/2013



Quality Control Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)

Batch 84837		SampType: MSD		Units µg/L		RPD Limit 20				Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	
Cadmium		2.00		45.1	50.0	1.8	86.6	44.6	1.11	01/11/2013
Zinc		10.0	S	2950	500	2583	74.2	2976	0.74	01/11/2013

EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)

Batch 84836		SampType: MBLK		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Cadmium		2.00		< 2.00	2.00	0	0	-100	100	01/11/2013
Zinc		10.0		< 10.0	10.0	0	0	-100	100	01/11/2013

Batch 84836		SampType: LCS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Cadmium		2.00		47.3	50.0	0	94.6	85	115	01/11/2013
Zinc		10.0		481	500	0	96.2	85	115	01/11/2013

Batch 84836		SampType: MS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Cadmium		2.00		46.9	50.0	2.6	88.6	75	125	01/11/2013
Zinc		10.0		3170	500	2709	92.4	75	125	01/11/2013

Batch 84836		SampType: MSD		Units µg/L		RPD Limit 20				Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	
Cadmium		2.00		46.7	50.0	2.6	88.2	46.9	0.43	01/11/2013
Zinc		10.0		3160	500	2709	90.0	3171	0.38	01/11/2013

STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA

Batch 84827		SampType: MBLK		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lead		2.00		< 2.00	2.00	0	0	-100	100	01/11/2013

Batch 84827		SampType: LCS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lead		2.00		14.8	15.0	0	98.9	85	115	01/11/2013



Quality Control Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA

Batch 84827		SampType: MS		Units µg/L						
SampID: 13010449-002CMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Lead	2.00		24.9	15.0	10.6521	94.9	70	130	01/11/2013	

Batch 84827		SampType: MSD		Units µg/L				RPD Limit 20		
SampID: 13010449-002CMSD										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed	
Lead	2.00		24.9	15.0	10.6521	95.3	24.8918	0.23	01/11/2013	

STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)

Batch 84838		SampType: MBLK		Units µg/L						
SampID: MB-84838										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead		2.00		< 2.00	2.00	0	0	-100	100	01/11/2013

Batch 84838		SampType: LCS		Units µg/L						
SampID: LCS-84838										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Lead	2.00		13.9	15.0	0	92.8	85	115	01/11/2013	

Batch 84838		SampType: MS		Units µg/L						
SampID: 13010449-002DMS										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead		2.00		16.7	15.0	4.5308	80.8	70	130	01/11/2013

Batch 84838		SampType: MSD		Units µg/L				RPD Limit 20		
SampID: 13010449-002DMSD										Date
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Analyzed	
Lead	2.00		17.2	15.0	4.5308	84.2	16.6528	2.97	01/11/2013	



Receiving Check List

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 13010449

Client Project: Leadwood Mine Tailings Site NPDES

Report Date: 15-Jan-13

Carrier: Neil Talbott

Received By: SRH

Completed by:

On:

10-Jan-13

Emily E. Pohlman

Reviewed by:

On:

10-Jan-13

Michael L. Austin

Pages to follow: Chain of custody

1

Extra pages included

0

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>	Temp °C 0.4
Type of thermal preservation?	None <input type="checkbox"/>	Ice <input checked="" type="checkbox"/>	Blue Ice <input type="checkbox"/>	Dry Ice <input type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Reported field parameters measured:	Field <input type="checkbox"/>	Lab <input checked="" type="checkbox"/>	NA <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water - at least one vial per sample has zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials <input checked="" type="checkbox"/>
Water - TOX containers have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No TOX containers <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
NPDES/CWA TCN interferences checked/treated in the field?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>

Any No responses must be detailed below or on the COC.



Chain of Custody

1001 Diamond Ridge, Suite 1100
Jefferson City, MO 65109
(573) 638-5000

Project Number: 25860013.00 TLM2 021

Project Name: Leadwood Mine Tailing Site NPDES

Sample Origination State: MO (use two letter postal state abbreviation)

COC Number: LWP 010913

Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix		Type		pH	Total Suspended Solids	Sulfate	Settleable Solids	Total Organic Carbon	Total Metals	Dissolved Metals	Hardness	VOCs (tared MeOH) #1	GRO, BTE (tared MeOH) #1	DRO (tared unpreserved) #1	Metals (unpreserved) #2	SVOCs (unpreserved) #2	% Solids (plastic vial unpreserved)	Total Number of Containers	COC 1 of 1 0.4°C ice
						Water	Soil	Grab	Comp																
1. LW-001	13010449	001		01/09/13	08:10	X			X	X	X	X	X	X	X	X	X							5	Preservatives: 2 HNO3, 1 H2SO4, 2 Unpreserved
2. LW-002	002			01/09/13	09:35	X			X	X	X	X	X	X	X	X	X							5	Preservatives: 2 HNO3, 1 H2SO4, 2 Unpreserved
3. LW-US	003			01/09/13	07:45	X			X	X	X		X	X	X	X	X							5	Preservatives: 2 HNO3, 1 H2SO4, 2 Unpreserved
4. LW-DS	004			01/09/13	10:10	X			X	X	X		X	X	X	X	X							5	Preservatives: 2 HNO3, 1 H2SO4, 2 Unpreserved
5. LW-DUP	005			01/09/13	--:--	X			X	X	X		X	X	X	X	X							5	Preservatives: 2 HNO3, 1 H2SO4, 2 Unpreserved
6.																									
7.																									
8.																									

Comments: Invoice to Mark Nations at Doe Run. Results to be sent to Allison Olds (aolds@barr.com) at Barr Engineering, Andrea Nord (anord@barr.com) at Barr Engineering, and Mark Nations (mnations@doerun.com) at Doe Run.

Matrix is surface water.

Metals include Cadmium, Lead, and Zinc.

Common Parameter/Container - Preservation Key

#1 - Volatile Organics = BTEX, GRO, TPH, 8260 Full List

#2 - Semivolatile Organics = PAHs, PCP, Dioxins, 8270 Full List, Herbicide/Pesticide, PCBs

#3 - General = pH, Chloride, Fluoride, Alkalinity, TSS, TDS, TS, Sulfate

#4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By: Stephen Moilanen	On Ice? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Date: 1/9/13	Time: 14:30	Received by: [Signature]	Date: 1/10/13	Time: 10:00
Relinquished By: [Signature]	On Ice? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Date: 1/10/13	Time: 11:17	Received by: [Signature]	Date: 1/10/13	Time: 11:27
Samples Shipped VIA: <input type="checkbox"/> Air Freight <input type="checkbox"/> Federal Express <input type="checkbox"/> Sampler <input checked="" type="checkbox"/> Other: Courier Pick Up				Air Bill Number: pres ✓ 1/10/13		

Distribution: White - Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator